

CORRES. CONTROL  
OUTGOING LTR. NO.

DOE ORDER # 4700.1

05-RF-00083

DIST.	LTR	ENC
DIETER, T.J.		
FERRERA, D.W.	X	
LINDSAY, D.C.		
LONG, J.		
LYLE, J.L.		
MARTINEZ, L. A.		
PIZZUTO, V.M.		
SHELTON, D.C.		
SPEARS, M.S.		
TUOR, N. R.		



January 20, 2005

05-RF-00083

BEAN, C.		
DECK, C.		
FOSS, D.	X	X
FRANCIS, M.		
FREIBOTH, C.		
GEIS, A.		
GIBBS, F.	X	
HUMISTON, T.		
KNAPP, S.		
LINSINBIGLER, H.		
MYERS, K.		
NESTA, S.	X	X
NORTH, K.		
OMAN, K.		
PLAPPERT, R.		
PRIMROSE, A.		
RICHARDELLA, R.	X	X
SNYDER, D.P.		
SWARTZ, J.M.	X	X
WARD, D.A.		
WIEMELT, K.		
SILLS, S.		
SHULER, K.		

Gary Morgan, Functional Lead  
Cadre Project Management Division  
DOE, RFPO

RSOP NOTIFICATION LETTER FOR BUILDING 559 DEMOLITION -FEG-001-05

Attached is a draft transmittal letter to the Colorado Department of Public Health and Environment for the RSOP notification for Buildings 559 and 561 demolition. Please contact Dyan Foss X7577 with questions or concerns.

*Frank E. Gibbs*

Frank E. Gibbs  
Deputy Project Manager

Orig. and 1 cc - Gary Morgan

Attachment:  
As Stated

DLF:pvt

cc:  
Joe Legare, RFPO

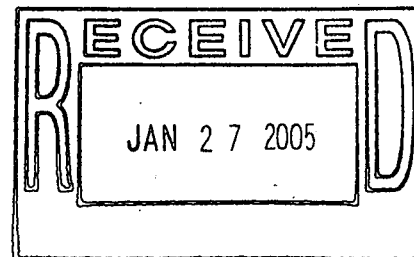
CORRES. CONTROL	X	X
ADMIN RECD/T130G	X	X
TRAFFIC		
PATS/130		
CLASSIFICATION:		
UCNI		
UNCLASSIFIED		
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER  
SIGNATURE:

Date:  
IN REPLY TO RFP CC NO.:

ACTION ITEM STATUS:  
☐ PARTIAL/OPEN  
☐ CLOSED  
LTR APPROVALS:

ORIG. & TYPIST INITIALS:  
DLF:pvt



ADMIN RECORD

Kaiser-Hill Company, L.L.C.,  
Rocky Flats Environmental Technology Site, 10808 Highway 93, Unit B, T130F, Golden, CO 80403-8200 ♦ (303) 966-7577

B559-A-000040

1/7

Steve Gunderson  
Colorado Department of Health and Environment  
4300 Cherry Creek Drive South  
Denver, CO 80222-1530

## RSOP NOTIFICATION LETTER FOR BUILDINGS 559 AND 561 DEMOLITION

Mr. Gunderson:

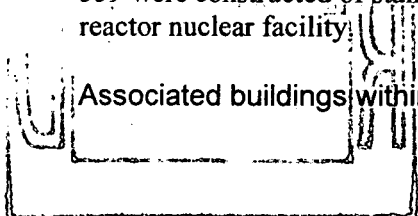
This letter is notification of Rocky Flats Cleanup Agreement Standard Operating Protocol (RSOP) implementation in accordance with the *RSOP for Facility Disposition*. This notification and *RSOP for Component Removal, Size Reduction, and Decontamination Activities* notification agreed to by CDPHE on June 10, 2002, encompass the activities required to demolish the Buildings 559 and 561, including the tunnel between these buildings.

This notification does not include the slabs and below grade features associated with Building 559 and 561. The slab will remain in place and protected until the entire building has been demolished; the slab will be removed in accordance the *RSOP for Environmental Remediation*, Notification 05-02 (in preparation). This approach is due to residual contamination in the slab, cracks in the slab, and expansion joints and the potential to encounter groundwater during the slab and below grade feature removal. In addition, the under building sampling identified an area that requires soil remediation. Leaving the slab in place will protect this area, and the soil can be removed essentially at the same time the slab is removed. The removal of the slab and below grade features will be conducted with similar and equivalent controls required for building demolition, particularly with respect to dust generation.

Building 559 is a one-story, rectangular-shaped complex containing over 32,600 square feet of floor space. Building 559 is constructed of concrete columns erected on concrete footings. Exterior walls between the columns consist of two thicknesses of non-reinforced concrete block. Most of the interior walls are concrete block. The floors are poured concrete, covered with a polyurethane/plastic finish, quarry tile, or vinyl-asbestos tile. The roof is flat and contains pre-stressed single- and double-tee concrete slabs supported by reinforced concrete beams. Small wings extend from the northeast and southwest sides of the structure, forming a rectangular outline. The only exterior windows are located in Room 135, the former lunchroom. Later additions to the building include loading docks and ramps, a storeroom, a locker room, a lunch room, an entryway, a receiving and storage area, additional laboratory space, excavation of a waste holding pit, and an underground corridor.

Physical barriers and zones were present to confine the movement and transportation of radioactive materials within the building. The ventilation system created a negative air pressure differential from zones of no radioactivity toward areas of potentially higher radioactivity. Differential pressure sensing instruments maintain the air pressure balance between zones. The outside shell of the laboratory provided additional containment; double-door airlocks were present between passageways. Gloveboxes in Building 559 were constructed of stainless steel or carbon steel and lined with Teflon. The building was a non-reactor nuclear facility.

Associated buildings within the Building 559 complex included:



- Building 561, the Filter Plenum, was built in 1973 to house the exhaust plenums for the laboratory building. It is connected to Building 559 via underground corridors containing ventilation exhaust ducts. The underground corridor is approximately 26 feet long and is constructed of corrugated metal pipe arch;
- Building 562 was built in 1973. It was a one-story, cement block structure located east of Building 561 and housed the emergency generator for Building 561;
- Buildings 560 and 563, built in 1967 and 1983, respectively, were cooling towers constructed of reinforced concrete; and
- Building 528 is an underground waste holding pit that contained two 2,000-gallon tanks that collected waste liquids from Buildings 559 and 561 for subsequent transfer to the waste treatment facility.

The plutonium laboratory was constructed in 1967, and first began operations in January 1968. Samples of recovered, cast, and purified materials from the Plant were analyzed in the lab. The building contained laboratory facilities for conducting spectrochemical, chemical, and mass spectrometric analyses. In 1973, the construction of Building 561 expanded the capabilities of the laboratory. Support tasks in Building 559 included primary analytical support for Building 707 production operations; Raschig Ring analysis and certification; duct remediation; analysis and characterization of low-level waste; and analysis of contaminated polychlorinated biphenyls. Later projects included the Waste Isolation Pilot Project Bin and Alcove test program; the Waste Stream and Residue Identification and Characterization program; and analytical support for the consolidation and stabilization of nuclear materials.

For administrative purposes, there were two analytical laboratories present in the structure. The production support and plant support laboratories shared equipment and space. The area along the north side of the building was divided into rooms for offices, radiation monitoring, a computer room, restrooms, a locker room, storerooms, and maintenance equipment. Four large areas along the south side and east end of the building were used for mechanical equipment and laboratories. Specific laboratories included the spectrochemical analysis laboratory (Room 101), the chemistry laboratory (Room 102), and the mass spectroscopy laboratory (Room 103). Radioactive materials processed in the laboratories were received and shipped from a loading dock on the south side of the building. A second loading dock at the west end was used to receive building supplies.

Laboratory services ceased in February 2003. The reconnaissance level characterization identified Buildings 559, 561 (including the tunnel) and 528 as type 2 facilities. The other facilities in the complex were identified as type 1 facilities. The disposition of Building 528 was addressed under a separate RSOP notification.

Facility decommissioning was initiated 2002 in accordance with the *RSOP for Component Removal, Size Reduction and Decontamination Activities*. Loose and fixed equipment have been removed and decontamination efforts were completed. Decontamination consisted of vacuuming, wiping, pressure washing, scabbling, and shaving, as appropriate. After these activities were completed, in-process radiological surveys were conducted.

The decontamination efforts were successful on the upper portions of the building with some exceptions, primarily on the slabs and below grade features. There are cracks and expansion joints in the slab, which contain contamination that is not accessible through scabbling. These results and activities were discussed with CDPHE during bi-weekly status meetings, and there

was a general agreement that the decontamination efforts had been exhausted and the demolition/removal will proceed as follows<sup>1</sup>:

- All contaminated areas will be decontaminated using the best available method.
- In process surveys will be conducted on areas, including slabs and below grade features, with some residual contamination and fixative will be applied.
- Information on residual contamination will be provided to the Site air quality group for an assessment of potential air emission impacts during demolition/removal.
- Pre-demolition surveys will be conducted on areas that meet unrestricted release.
- Final surveys will be conducted on areas that do not meet unrestricted release as necessary for waste characterization and work planning purposes.
- All of the building will meet the unrestricted release criteria for removable contamination prior to demolition.
- RCRA units will be closed.
- Chemicals will be removed.
- Encapsulant will be applied as necessary to slabs and below grade features. For the transite ducting, the duct will be pressure washed, and a fixative will be applied, to the extent possible, with a specialized spray head that can be extended through these ducts.
- The plenums will be prepared by performing gross decontamination, applying fixatives, preparing the plenum for transportation, and placing a reinforced tarp over the top of the plenum for protection during the demolition of the surrounding structure.
- The portions of the building that meet unrestricted release will be demolished in accordance with the *RSOP for Facility Disposition*.
- The portions of the building that do not meet unrestricted release will be removed in accordance with the *RSOP for Component Removal, Size Reduction, and Decontamination Activities, Section 3.8*. Surveys will be performed to identify the boundaries of contamination and a safety margin will be developed around the contaminated area. A safety margin is a boundary outlined around the contaminated area, up to where mechanical removal methods can be used prior to initiating cutting techniques.
- The slab will remain in place and covered with plywood. Metal plates will be placed over the areas that will be used for demolition access.
- The slab and below grade features will be removed in accordance with the *RSOP for Environmental Remediation* and appropriate soil remediation will be conducted with confirmation sampling.

A contact record was prepared, dated March 31, 2004, that addressed the demolition methodology for Building 559. This notification will be used to implement the agreements from that contact record, which indicated that large ducting running from Building 559 to 561 and Tank 301 will be characterized, fixed, sectioned and removed as waste during the demolition activity. The specifics of this activity will be discussed in status meetings, and the work package(s) will be available for CDPHE information; any concerns raised by CDPHE will be addressed through the consultative process and if necessary, a contact record.

This work will be conducted by Kaiser-Hill, LLC (K-H). The requirements, methods, controls, and processes outlined in both RSOPs will be followed. This work will be conducted in accordance with the work control documentation prepared by K-H and its subcontractors. The exact methods and process and progress of the activities will be communicated to the

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<sup>1</sup> The sequence is a complete list of activities, some of the activities have already been completed, as indicated in the letter.

Department of Energy and Lead Regulatory Agency through the consultative process. A level one schedule of the work has been attached.

Section 3.8.1 of the *RSOP for Component Removal, Size Reduction, & Decontamination Activities* requires the following assessment:

- (1) Relative Cost – There is no relative cost for this activity. The contaminated areas cannot be removed prior to demolition because removal would cause a structural issue, or would require removal of portions of the slab, which increase risks to workers from hoisting, rigging, and falls and increases the potential for contamination spread to the area below the slab.
- (2) Structural Evaluation – The work package will be reviewed and signed off by a structural engineer.
- (3) Air Emissions – An analysis of the potential radionuclide emission modeling was completed for the Buildings 559 and 561 demolition and slab remediation project. CAP88-Pc was used for the model to estimate the dose to the most impacted public receptor. The highest modeled dose was 4.8 E-05 mrem/year, which is far below the monitoring threshold of 0.1 mrem/year in the Site Integrated Monitoring Plan and the 10 mrem/year standard from 40 CFR 61, Subpart H. The model inputs included total quantity of fixed weapons grade plutonium as 0.2423 grams, a 10% damage ratio (assumed 10% of the fixed contamination will become removable during the demolition/remediation activities), and a  $10^{-3}$  emission factor (both taken from the peer-reviewed Building 776/777 Air Modeling Technical Document) were used for the inputs to the CAP88-PC model.

Air monitoring will be performed in accordance with the requirements of the Site IMP. The existing RFETS Radioactive Ambient Air Monitoring Program (RAAMP) sampler network will be used for ambient air monitoring during removal activities. The RAAMP sampler network continuously monitors airborne dispersion of radioactive materials from the Site into the surrounding environment. Work area monitoring will be conducted for worker health and safety as dictated by Industrial Hygiene and Radiological Engineering.

- (4) Dust Generation – An analysis of the potential emissions will be completed by the air quality group. Dust and contamination control will include the application of fixative, water during removal, work restrictions during high winds<sup>2</sup> (typically 15 mph), and placement of the contaminated materials in waste containers as soon as the material is size reduced. These measures will be included in the work package.
- (5) Impacts to Surface Water – It is anticipated that this activity will have a minimal potential for impacting surface water or basement areas of the building. The area around the contaminated portion of the building shell will be inspected to identify potential pathways for migration of contaminants, including roof and floor drains, cracks, seams, floor/wall intersections, and foundation drains. Pathways will be closed by covering or filling (e.g., plastic sheeting or grout). Surface water (i.e., stormwater run-on and run-off) will be

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<sup>2</sup> The 15 mph high wind value will be used unless controls can be implemented to control the dust above 15 mph. The determination on whether the dust control is adequate above 15 mph will be made by the industrial hygiene/radiological engineering staff. The goal for dust control when handling debris above unrestricted release will be no visible dust.

controlled using standard construction methods, including silt fences, hay bales, and diversion ditches.

In accordance with the RFETS Erosion Control Management System manual, an assessment of the area will be made and controls put in place prior to initiating demolition/removal. Placement of surface water controls will be prerequisites in the work package for demolition/removal.

- (6) Impacts to Migratory Bird – There are no active birds nests associated with these areas, and continual walk downs will be completed until the demolition/removal is complete.

This activity was discussed with the public on November 16, 2004 and an update will be provided on January 18, 2005.

The administrative record requirements for this activity include the following:

- Final Rocky Flats Cleanup Agreement (RFCA)
- RFETS Decommissioning Program Plan (DPP)
- RFCA Standard Operating Protocol for Facility Disposition
- RFCA Standard Operating Protocol for Component Removal, Size Reduction and Decontamination Activities
- RFCA Standard Operating Protocol for Environmental Remediation
- Pre-Demolition Survey Reports (PDSRs) Buildings 559 and 561
- Notification Letter and subsequent CDPHE correspondence, if appropriate

Progress, status and work planning will continue to be conducted in accordance with the consultative process at biweekly status meetings for this project. The project will not implement this notification until the following have been completed or obtained:

- CDPHE approval of the notification;
- CDPHE approval on the appropriate Pre-Demolition Surveys Reports and/or radiological and beryllium surveys for the areas that do not meet the unrestricted release criteria; and

If you have any questions regarding this, please contact Gary Morgan at (303) 966-6003.

Joe Legare  
U.S. Department of Energy

Start Date	Finish Date	Date Date
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